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Claim 1 (previously presented): A centrifuge means operating to separate gases of differing chemical composition and molecular weight by a centrifugal force field, there being vanes associated with said centrifuge means to receive and pass said gases, with turbine effect.

Claim 2 (currently amended): A gas processing system including a centrifuge means operating to separate carbon dioxide from methane by a centrifugal force field, and ~~means to inject a treatment fluid into said system for purposes of gas treatment~~ vanes associated with said centrifuge means to receive and pass the carbon dioxide and methane mixture with turbine effect.

Claim 3 (original): A multiplicity of centrifuge means as defined in claim 1, arranged such that the separated gases are further concentrated by introducing them into successive of said gas centrifuge means.

Claim 4 (original): A multiplicity of centrifuge means as defined in claim 2 configured such that the separated streams of carbon dioxide and methane are further concentrated by introducing them into successive of said gas centrifuge means.

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Claim 5 (original): A gas centrifuge comprising, in combination:

- a) a hollow shaft to pass and introduce a gas mixture into a rotating cylinder,
- b) said cylinder having axial vanes to cause the gas mixture to rotate with the same angular speed of the cylinder,
- c) a radial passage connected to the periphery of the cylinder to receive and pressurize a produced and concentrated heavier gas stream,
- d) a nozzle connected to the passage to convert the pressure of the heavier gas stream to velocity adding a torque to the cylinder, and
- e) an opening in the hollow shaft to receive and remove a produced and concentrated lighter gas stream from the cylinder.

Claim 6 (original): A gas centrifuge comprising, in combination:

- a) a first nozzle accelerating a gas mixture and introducing it into a rotating cylinder, adding torque to the cylinder,
- b) said cylinder having associated vanes to receive torque from the flowing gas and causing the gas to rotate with the same angular speed as the cylinder,

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c) a radial passage connected to the periphery of the cylinder operating to pressurize a produced and concentrated heavier gas stream,

d) a second nozzle connected to the passage and operating to convert the pressure of the heavier gas stream to velocity, adding torque to the cylinder,

e) an open scoop oriented perpendicular to the direction of rotation operating to remove a produced and concentrated lighter gas from the cylinder, and

f) a passage contoured and operating to recover the velocity head of the concentrated lighter gas as pressure.

Claim 7 (original): A gas centrifuge comprising, in combination:

a) a first nozzle accelerating a gas mixture and introducing it into a rotating cylinder, adding torque to the cylinder,

b) said cylinder having associated vanes to receive torque from the flowing gas and causing the gas to rotate with the same angular speed as the cylinder,

c) a first radial passage connected to the periphery of the cylinder operating to pressurize a produced and concentrated heavier gas stream,

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d) a second nozzle connected to the first passage and operating to convert the pressure of the heavier gas stream to velocity, adding torque to the cylinder,

e) a second radial passage connected to the periphery of the cylinder operating to pressurize a produced and concentrated lighter gas stream,

f) a third nozzle connected to the second passage and operating to convert the pressure of the lighter gas stream to velocity adding torque to the cylinder.

Claim 8 (original): The combination of claim 5 where the heavier gas stream consists of carbon dioxide and the lighter gas stream consists of methane.

Claim 9 (original): The combination of claim 6 where the heavier gas stream consists of carbon dioxide and the lighter stream consists of methane.

Claim 10 (original): The combination of claim 7 where the heavier gas stream consists of carbon dioxide and the lighter stream consists of methane.

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Claim 11 (original): The combination of claim 5 wherein seals are provided to isolate cylinder inlet and exit gas streams from each other and from gas surrounding the cylinder.

Claim 12 (original): The combination of claim 6 wherein seals are provided to isolate cylinder inlet and exit gas streams from each other and from the gas surrounding the cylinder.

Claim 13 (original): The combination of claim 7 wherein seals are provided to isolate cylinder inlet and exit gas streams from each other and from the gas surrounding the cylinder.

Claim 14 (original): The combination of claim 5 wherein bearings are provided to support the shaft.

Claim 15 (original): The combination of claim 6 wherein bearings are provided to support the shaft.

Claim 16 (original): The combination of claim 7 wherein bearings are provided to support the shaft.

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Claim 17 (original): The combination of claim 5 wherein a prime mover is connected to the shaft to rotate the cylinder.

Claim 18 (original): The combination of claim 6 wherein a prime mover is connected to the shaft to rotate the cylinder.

Claim 19 (original): The combination of claim 7 wherein a prime mover is provided and is connected to the shaft to rotate the cylinder.

Claim 20 (original): The combination of claim 6 including a shaft supporting the cylinder for rotation, and a housing enclosing and supporting the shaft.

Claim 21 (original): The combination of claim 20 wherein said first nozzle is carried by the housing, at one end of the cylinder.

Claim 22 (original): The combination of claim 21 wherein said second nozzle is located near the opposite end of the cylinder, said vanes located between said first and second nozzles.

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Claim 23 (original): A cascade of centrifuges as defined in claim 8.

Claim 24 (original): A cascade of centrifuges as defined in claim 9, for successively increasing concentrations of carbon dioxide and methane in said streams.

Claim 25 (original): A cascade of centrifuges as defined in claim 10.

Claim 26 (previously presented): A method that includes

- a) providing a mixture of gases having carbon dioxide and/or other heavy gases and methane components, and also providing a rotary centrifuge,
- b) operating the rotary centrifuge to separate said components into separate streams,
- c) using the separated stream of carbon dioxide and methane to produce torque acting to aid rotation of the centrifuge.

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Claim 27 (original): The method of claim 26 including using said mixture received by the centrifuge as a flowing stream to produce torque acting to aid rotation of the centrifuge.

Claim 28 (previously presented): The method that includes

- a) providing a rotary centrifuge to receive a mixture of gases having carbon dioxide and/or other heavy gases and methane components,

- b) operating the rotary centrifuge to separate said components into separate streams,

- c) using the separated streams of carbon dioxide and methane to produce torque acting to aid rotation of the centrifuge,

- d) and including providing vanes in the centrifuge to receive and pass a gaseous mixture.

Claim 29 (currently amended): A centrifugal gas processing system comprising:

- a) a first centrifugal means to separate free liquids from gas, light liquids from heavy liquids, and solids from liquids,



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b) a second centrifugal means to extract liquids from said gas by lowering the pressure and temperature and separating the formed liquids from the gas,

c) a third centrifugal means to process said gas thereby to separate heavy gases from light gases,

d) there being vanes associated with ~~at least one of~~ said second and/or third centrifugal means to receive and pass a mixture of gases or a gas/liquid mixture with turbine effect.

Claim 30 (original): The combination of the claim 29 system together with a means to inject a treatment liquid into said system for purposes of gas treatment.

Claim 31 (currently amended): A centrifugal gas processing system comprising:

a) a first centrifugal means to separate free liquids from gas, light liquids from heavy liquids, and solids from liquids,

b) a second centrifugal means to extract liquids from said a) gas by lowering the pressure and temperature and separating the formed liquids from the gas,

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c) there being vanes connected with at least ~~one of~~ said second centrifugal means to receive a flowing stream of liquid, with turbine effect.

Claim 32 (currently amended): A centrifugal gas processing system comprising in combination:

a) a first centrifugal means to extract liquids from gas by lowering the pressure and temperature and separating the formed liquids from the gas,

b) a second centrifugal means to process said gas thereby to separate heavy gases from light gases,

c) and means to inject a treatment liquid into said ~~system~~ first centrifugal means for purposes of gas processing.

Claim 33 (currently amended) A centrifugal gas processing system, comprising:

a) a first centrifugal means to separate free liquids from gas, light liquids from heavy liquids, and solids from liquids,

b) a second centrifugal means to extract liquids from said gas by lowering the pressure and temperature and separating the formed liquids from the gas,

b)c) a third centrifugal means to process said gas thereby to separate heavy gases from light gases,

e)d) and means to inject a treatment liquid into said first centrifugal means for purposes of gas processing.

Claim 34 (currently amended): A centrifugal gas processing system comprising in combination:

a) a first centrifugal means to extract liquids from gas by lowering the pressure and temperature and separating the formed liquids from the gas,

b) a second centrifugal means to process said gas thereby to separate heavy gases from light gases,

c) and including means to inject a treatment liquid into said ~~system~~ first centrifugal means for purposes of gas treatment,

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d) and vanes in the system to receive and be rotated by fluid flowing in the system, with turbine effect.

Claim 35 (previously presented): A gas processing system comprising

a) a centrifugal means to extract liquids from gas by lowering the pressure and temperature and separating the formed liquids from the gas,

b) means to inject a treatment liquid into said centrifugal means for purposes of gas treatment,

c) there being vanes in said centrifugal means to receive and pass a flowing gas/liquid mixture with turbine effect.

Claim 36 (currently amended) A system including a gas liquid separator and a gas centrifuge means, to receive a fluid stream and operating to separate carbon dioxide from another gas, there being vanes associated with said centrifuge means to receive the fluid stream, with turbine effect, and there being means to inject a treatment fluid to flow into the ~~system~~ gas liquid separator for purposes of fluid treatment.

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Claim 37 (previously presented): The combination of claim 5 wherein the heavier gas stream consists essentially of carbon dioxide and the lighter gas stream consists of another gas.

Claim 38 (previously presented): The combination of claim 6 wherein the heavier gas stream consists essentially of carbon dioxide and the lighter gas stream consists of another gas.

Claim 39 (previously presented): The combination of claim 7 wherein the heavier gas stream consists essentially of carbon dioxide and the lighter gas stream consists of another gas.

Claim 40 (previously presented): The combination of claim 37 wherein the heavier gas stream consists of carbon dioxide, and the lighter gas stream consists of methane.

Claim 41 (canceled).